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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,287	12/06/2001	Sang Woo Kang	10729-P67237US0	5074

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EXAMINER

MOHAMEDULLA, SALEHA R

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/003,287

Applicant(s)

KANG, SANG WOO

Examiner

Saleha R. Mohamedulla

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/6/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-10 is/are rejected.
- 7) ☒ Claim(s) 2-5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claims 1-10 are pending.

Specification

1. The abstract of the disclosure is objected to because it contains more than 150 words.

The abstract should generally be limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US# 6,514,647 to Hinogami in view of US# 6,613,482 to Yano et al.

Hinogami teaches forming on a semiconductor substrate, a first conductive film pattern, forming a first insulating film on the first conductive film pattern, forming a first resist film on the first insulating film, forming, from the first resist film, a first resist pattern by irradiating the first resist film with exposing light through a first photomask and developing the first resist film after irradiation, forming a first insulating film pattern from the first insulating

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film by etching the first insulating film by using the first resist pattern as a mask, forming a second conductive film pattern from a second conductive film deposited on the first insulating film pattern, forming a second insulating film on the second conductive film pattern, forming a second resist film on the second insulating film; forming, from the second resist film, a second resist pattern by irradiating the second resist film with exposing light through a second photomask and developing the second resist film after irradiation, forming a second insulating film pattern from the second insulating film by etching the second insulating film by using the second resist pattern as a mask, and forming a third conductive film pattern from a third conductive film deposited on the second insulating film pattern (col. 8, line 35 – col. 9, line 8). Semiconductor substrates are typically quartz substrates and chrome is a conductive material. Hinogami also teaches that the resist is exposed to light (col. 11, lines 35-37). Hinogami teaches forming an insulating layer. Oxides are insulating materials. Hinogami does not teach forming an oxide layer by oxidizing the conductive layer pattern.

Yano teaches a member adopted to be irradiated by a charged beam in an oxidizing atmosphere in a charged beam processing apparatus. The member comprises a region, which is to be irradiated by the charged beam, which is covered by a material that becomes a conductive oxide when the material is oxidized. The member can be a mask (col. 1, lines 50-55). Therefore, Yano teaches oxidizing a conductive material and charged beam exposure. Yano also teaches an oxygen plasma step during exposing (col. 6, lines 25-30). Yano also teaches that the mask is cleaned (col. 1, lines 34-38). Therefore, Yano teaches oxygen ashing and cleaning. Yano also teaches trench etching (col. 9, lines 30-35). Dry etching in a gas containing chlorine and boron is commonly used for trench etching.

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The references are analogous art as they are drawn to exposure masks. It would have been obvious to one of ordinary skill in the art to oxidize the conductive material of Hinogami using the method of Yano in order to form a high accuracy pattern on the wafer (col. 1, lines 40-45).

Allowable Subject Matter

3. Claims 2-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach or suggest that the conductive layer is an Ag layer.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Saleha Mohamedulla whose telephone number is (703) 308-1260. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Huff, can be reached on (703) 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310. The After Final fax phone number is (703) 872-9311. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Saleha R. Mohamedulla
Patent Examiner
Technology Center 1700
October 29, 2003